

CLAIMS

What is claimed is:

1. A method of manufacture of a micro-perforator, comprising:
providing a solidifiable material, and forming the solidifiable material, optionally in admixture with a diagnostic or therapeutic agent into a desired micro-perforator shape;
wherein the step of forming the solidifiable material includes a step of solidifying the solidifiable material such that the solidified material in the desired micro-perforator shape has a plurality of pores that optionally comprise the diagnostic or therapeutic agent; and
optionally contacting the solidified material in the desired micro-perforator shape with the diagnostic or therapeutic agent such that the diagnostic or therapeutic agent is at least partially enclosed in the plurality of pores.
2. The method of claim 1 wherein the solidifiable material comprises a sol/gel material.
3. The method of claim 2 wherein the sol/gel material further comprises the diagnostic or therapeutic agent.
4. The method of claim 3 wherein the step of forming comprises a step of filling the sol/gel material into a mold to which a force is applied to improve settling of the sol/gel material into the mold, and wherein the step of forming is performed at ambient temperature.
5. The method of claim 2 wherein porosity of the solidified sol/gel material is controlled via adjustment of the pH in the unsolidified sol/gel material.
6. The method of claim 1 wherein the solidifiable material comprises a sinterable material.
7. The method of claim 6 wherein the sinterable material further comprises the diagnostic or therapeutic agent.

8. The method of claim 6 wherein porosity of the solidified sinterable material is controlled via at least one of pressure, particle size, and temperature during the step forming the solidifiable material.
9. The method of claim 1 wherein the solidifiable material comprises a gelling agent or a viscous material, and wherein the step of forming the solidifiable material includes a step of removing air bubbles from the gelling agent or viscous material using positive or negative pressure.
10. The method of any one of claims 2, 6, or 9, wherein the solidifiable material shrinks during the step of solidifying the solidifiable material.
11. The method of claim 10 wherein the shrinking reduces an apex angle of the micro-perforator.
12. The method of claim 10 wherein the shrinking is controlled by the formulation of the solidifiable material.
13. The method of claim 10 wherein the shrinking is controlled by drying the solidifiable material.
14. The method of claim 1 wherein the solidified material in the desired micro-perforator shape that optionally comprises the diagnostic or therapeutic agent dissolves in a skin of a person over a predetermined period when applied to the skin.
15. The method of claim 14 wherein dissolution of the micro-perforator is completed in less than one day.
16. The method of claim 1 further comprising a step in which the solidified material in the desired micro-perforator shape is contacted with a second solidifiable material, and in which the second solidifiable material is formed into a desired micro-perforator shape to provide a laminated micro-perforator.
17. A micro-perforator comprising a porous material and optionally comprising at least one of a diagnostic and therapeutic agent, wherein the micro-perforator is substantially insoluble in a skin of a person when applied to the skin.

18. The micro-perforator of claim 17 manufactured in a method according to any one of claim 1 or claim 6.
19. The micro-perforator of claim 17 further comprising a pump fluidly coupled to the micro-perforator.
20. A micro-perforator comprising a porous material and optionally comprising at least one of a diagnostic and therapeutic agent, wherein the micro-perforator is dissolvable in a skin of a person when applied to the skin over a predetermined period greater than one hour.
21. The micro-perforator of claim 20 manufactured in a method according to claim 1.
22. The micro-perforator of claim 20 further comprising a pump fluidly coupled to the micro-perforator.
23. A device comprising a plurality of dissolvable micro-perforators in a predetermined array, wherein at least some of the micro-perforators are coupled to an occlusive backing that enhances dissolution of the micro-perforators.
24. The device of claim 23 wherein the dissolution is enhanced by a fluid provided by a skin of a person to which the device is coupled.
25. The device of claim 23 wherein the dissolution is enhanced by a fluid provided by a fluid reservoir that is fluidly coupled to the micro-perforators.
26. A diagnostic device comprising a porous micro-perforator that comprises at least one of an analyte compartment and a reagent compartment, wherein the at least one of the analyte compartment and reagent compartment is fluidly coupled to a body fluid of a person when the micro-perforator is inserted into a skin of the person, and wherein the at least one of the analyte compartment and reagent compartment is operationally coupled to a detector.
27. The analytic device of claim 26 wherein a conduit between the body fluid and the detector is formed by dissolution of the porous micro-perforator.

28. The analytic device of claim 26 wherein a liquid contact between the body fluid and the detector is formed by a fluid in the at least one of the analyte compartment and reagent compartment of the porous micro-perforator.
29. The analytic device of claim 26 wherein the detector detects an analyte from the body fluid upon diffusion of the analyte into the analyte compartment.
30. The analytic device of claim 26 wherein the reagent compartment includes a reagent that reacts with an analyte from the body fluid to form a product, and wherein the detector detects the product.